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### IN THE CLAIMS

Please amend the claims as follows:

1-2. (Canceled)

3. (Currently Amended) A computer-implemented method comprising:  
identifying a candidate reuse region of a software program;  
determining an input set for the candidate reuse region, wherein the input set comprises a plurality of input registers for storing input values of the candidate reuse region;  
instrumenting the software program to, when executed, profile set-values for the input set, wherein each set-value comprises an input register value for each of the plurality of input registers;  
for each set-value, combining each of the input register values into a single value; and  
executing the instrumented software, wherein the executing includes tracking a number of times a set-value is encountered.
4. (Original) The computer-implemented method of claim 3 wherein combining comprises:  
folding each of the input register values to create folded values; and  
concatenating the folded values.
5. (Previously Presented) The computer-implemented method of claim 3 wherein instrumenting comprises inserting instructions to periodically sample set-values.
6. (Currently Amended) The computer-implemented method of claim 5 wherein the input-set comprises a plurality of input registers, and each set-value comprises an input register value for each of the plurality of input registers, and wherein instrumenting further comprises:  
inserting instructions into the software program which, when executed, will to combine  
each of the input register values into a single value; and

- inserting instructions into the software program which, when executed, will ~~to~~ index into a data structure of profile indicators using the single value.
7. (Original) The computer implemented method of claim 5 wherein instrumenting further comprises:  
inserting instructions to profile the top N occurring set-values, where N is chosen as a function of an expected number of reuse instances.
8. (Previously Presented) The computer-implemented method of claim 3 further comprising selecting the candidate reuse region as a computation reuse region.
9. (Currently Amended) A machine readable medium including instructions for a method of profiling software, the method comprising:  
identifying a candidate reuse region of the software;  
determining an input set for the candidate reuse region, wherein the input set comprises a plurality of input registers;  
instrumenting the software to profile, when executed, set-values for the input set, wherein each set-value comprises an input register value for each of the plurality of input registers; for each set-value, combining each of the input register values into a single value; and  
executing the instrumented software, wherein the executing includes tracking a number of times a set-value is encountered.
10. (Original) The machine readable medium of claim 9 wherein instrumenting comprises: inserting instructions to periodically sample set-values.
11. (Currently Amended) A computer-implemented method comprising:  
periodically sampling a set of registers to obtain register values, wherein the register values are input values of a software program region;  
determining an occurrence frequency of the register values;  
combining the register values into a single set-value; and

- storing the occurrence frequency and the single set-value in a data structure.
12. (Original) The computer-implemented method of claim 11 wherein periodically sampling comprises:  
sampling a plurality of registers to obtain a set-value every S occurrences of a candidate reuse region, where S is a sampling period.
13. (Original) The computer-implemented method of claim 12 further comprising:  
identifying a group of control equivalent candidate region entries and candidate load instructions;  
inserting instructions prior to the group, wherein the instructions set a predicate register every S occurrences; and  
inserting profiling instructions at each of the control equivalent candidate region entries and candidate load instructions, wherein the profiling instructions are predicated on the predicate register.
14. (Original) The computer-implemented method of claim 12 wherein storing comprises:  
accessing a record in the data structure as a function of the set-value; and  
incrementing a profile indicator at the record.
15. (Original) The computer-implemented method of claim 12 wherein periodically sampling further comprises sampling set-values in the plurality of registers at the beginning of a candidate reuse region, the plurality of registers being input registers to the candidate reuse region.
16. (Currently Amended) A computer-implemented method comprising:  
identifying a candidate load instruction in a software program;  
instrumenting the software program to, when executed, sample a location-value every S occurrences of the candidate load instruction;  
storing an occurrence frequency of the location-value[s] into a data structure; and  
executing the software program.

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17. (Currently Amended) The computer-implemented method of claim 16 wherein instrumenting comprises:
- inserting instructions in the software program to count ~~the~~ a number of times ~~each~~ the location-value is sampled; and
- inserting instructions in the software program to keep track of top location-values.
18. (Currently Amended) The computer-implemented method of claim 16 further comprising:
- identifying a group of control equivalent candidate region entries and candidate load instructions in the software program;
- inserting instructions in the software program prior to the group, wherein the instructions set a predicate register every S occurrences; and
- inserting profiling instructions in the software program at each of the control equivalent candidate region entries and candidate load instructions, wherein the profiling instructions are predicated on the predicated register.
19. (Original) The computer-implemented method of claim 17 wherein the candidate region includes a plurality of candidate load instructions, each of the plurality of load instructions being predicated on a common predicate register.
20. (Original) The computer-implemented method of claim 17 wherein inserting instructions to keep track of top location-values includes inserting sampling instructions configured to profile the top N occurrences of location-values, where N is an integer.
21. (Currently Amended) A machine readable medium including instructions for a method of profiling software, the method comprising:
- identifying a candidate load instruction in the software;
- instrumenting the software to, upon execution, sample a location-value every S occurrences of the candidate load instruction; and
- executing the software.

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22. (Original) The machine readable medium of claim 21 wherein instrumenting comprises inserting instructions in the software to count ~~the~~ a number of times ~~each~~ the location-value is encountered.
23. (Currently Amended) A computer-implemented method comprising:  
selecting reuse regions within a software program, the selecting including,  
    profiling top set-values for candidate reuse regions to produce a probability of top set-values;  
    storing an occurrence frequency of the top set-values ~~location-values~~ into a data structure; and  
    selecting the reuse regions as a function of the probability of the top set-values.
24. (Currently Amended) The computer-implemented method of claim 23 wherein profiling top set-values comprises:  
representing each top set-value as a single value; and  
accessing a data structure as a function of the single value to modify a profile indicator.
25. (Original) The computer-implemented method of claim 24 wherein accessing a data structure comprises accessing a data structure at least as large as a number of expected reuse instances.
26. (Original) The computer-implemented method of claim 25 wherein selecting comprises marking as reuse regions those candidate reuse regions having a finite number of top set-values that have a probability of occurrence greater than a threshold.
27. (Currently Amended) A machine readable medium including instructions for a method of selecting reuse regions within a software program, the method comprising:  
profiling top set-values for candidate reuse regions to produce a probability of top set-values, wherein the profiling occurs during execution of the software program;  
and  
selecting reuse regions as a function of the probability of top set-values.

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28. (Original) The machine readable medium of claim 27 wherein profiling set-values comprises:  
representing each top set-value as a single value; and  
accessing a data structure as a function of the single value to modify a profile indicator.
29. (Previously Presented) The machine-readable medium of claim 27 further comprising:  
identifying a candidate load instruction within the candidate reuse region; and  
instrumenting the software to profile location-values for the candidate load instruction.
30. (Currently Amended) A computer-implemented method comprising:  
identifying a candidate reuse region of a software program;  
determining an input set for the candidate reuse region, wherein the input set comprises a plurality of input registers;  
instrumenting the software program to, when executed, profile set-values for the input set, wherein each set-value comprises an input register value for each of the plurality of input registers, wherein instrumenting ~~further~~ includes,  
inserting instructions to combine each of the input register values into a single value; and  
executing the instrumented software.
31. (Currently Amended) The computer-implemented method of claim 30 further comprising:  
inserting instructions into the software program which when executed will ~~to~~ index a data structure of profile indicators using the single value.
32. (Previously Presented) The computer-implemented method of claim 30, wherein combining the register values into a single set-value is performed using an exclusive-or operation.

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33. (Currently Amended) A computer-implemented method comprising:
- sampling a plurality of registers to obtain one of a number of top set-values, wherein the sampling occurs every S occurrences of a candidate reuse region, where S is a sampling period, ~~and~~ wherein S is a multiple of the number of top set-values, and wherein the register values are input values of the candidate reuse region;
  - determining an occurrence frequency of the register values;
  - combining the register values into a single set-value; and
  - storing the occurrence frequency and the single set-value in a data structure.
34. (Previously Presented) The computer-implemented method of claim 33 further comprising:
- identifying a group of control equivalent candidate region entries and candidate load instructions;
  - inserting instructions prior to the group, wherein the instructions set a predicate register every S occurrences; and
  - inserting profiling instructions at each of the control equivalent candidate region entries and candidate load instructions, wherein the profiling instructions are predicated on the predicate register.
35. (Previously Presented) The computer-implemented method of claim 33, wherein storing comprises:
- accessing a record in the data structure as a function of the single set-value; and
  - incrementing a profile indicator.